






Renewable Energy Grants and Rebates for Businesses

November 2, 2006

Massachusetts Technology Collaborative

Massachusetts Renewable Energy Trust

Jon Abe, Project Manager

MASSACHUSETTS TECHNOLOGY COLLABORATIVE

RENEWABLE ENERGY TRUST








PRESENTATION OVERVIEW

- What is the Renewable Energy Trust?
- Massachusetts funding sources for Renewable Energy Projects:
  - Small Renewables Initiative
  - Large Onsite Renewables Initiative
- Overview of PV and Wind Project Paybacks








MTC AND THE TRUST

- The Renewable Energy Trust was established in 1998 to
  - increase the supply & demand for electricity from clean sources, and
  - promote the development of a Massachusetts renewable technology industry cluster.
- Massachusetts Technology Collaborative (MTC) selected to administer the Trust.
- **Supported over 700 projects, companies, and related activities with over $200 million since 2001.**

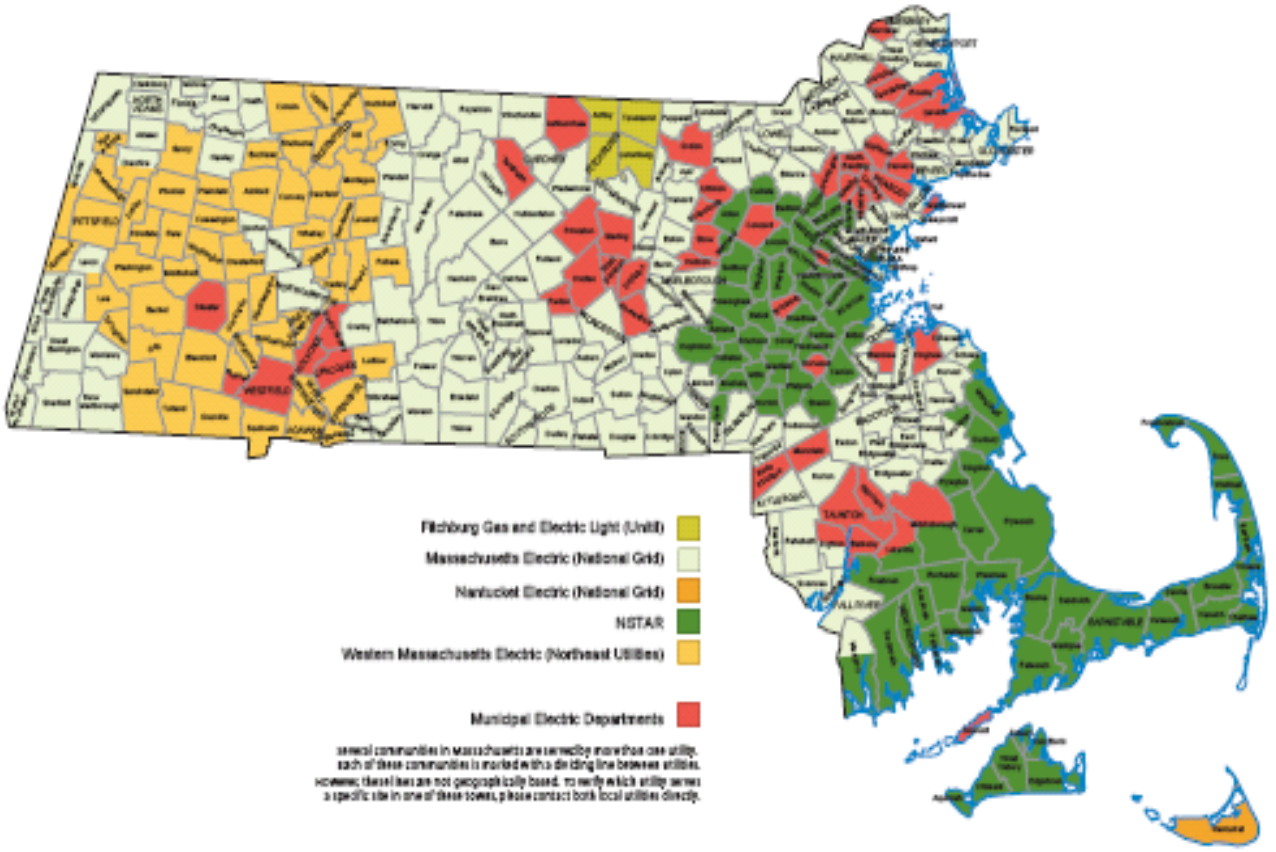






AREAS ELIGIBLE FOR FUNDING

- Source of funds is a surcharge → $25 million/yr
- Only customers in investor owned utility service territories:



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ELIGIBLE RENEWABLE TECHNOLOGIES

- Initiatives support commercially available technologies:

Small Renewables Initiative	Large Onsite Renewables Initiative	
Solar PV Wind Hydro	Solar PV Wind Hydro	Biomass Fuel Cells

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SMALL RENEWABLES INITIATIVE (=<10 kW)

- ~$3.6 million per year though FY2010.
- Grants of up to $50,000 for design & construction.
- Customer sited renewable energy projects (100% must be used onsite).
- Awards made through a non-competitive application process (must meet minimum technical standards).
- Actual award is based on the rebate matrix.









SMALL RENEWABLES INITIATIVE (=<10 kW)

SRI2 Initial Rebate Matrix					
			Technology		
			PV	Wind	Hydro
Distributed Generation			($/watt dc)	($/watt ac)	($/watt ac)
		Base Incentive ($/watt)	$2.00	$2.00	$4.00
	PLUS: Additions to Base				
		MA-manufactured components	$0.25	$0.25	$0.75
		Economic Target Area	$1.25	$1.25	$1.00
		Public Buildings	$1.50	$1.00	$2.00
		Building-Integrated PV	$1.00	N/A	N/A
	Affordable Housing				
		20% to less than 50% Low-income/ Affordable Housing (40-B), *or*	$1.00	$1.00	$1.00
		50% or greater Low-income/ Affordable Housing (40-B)	$2.50	$2.50	$2.50
	High Performance Buildings (for New Construction/ Major Rehab Only)				
		Green Buildings (LEED/CHPS), *or*	$1.00	$1.00	$1.00
		Advanced Buildings/ High Performance Homes (Energy Star)	$0.25	$0.25	$0.25



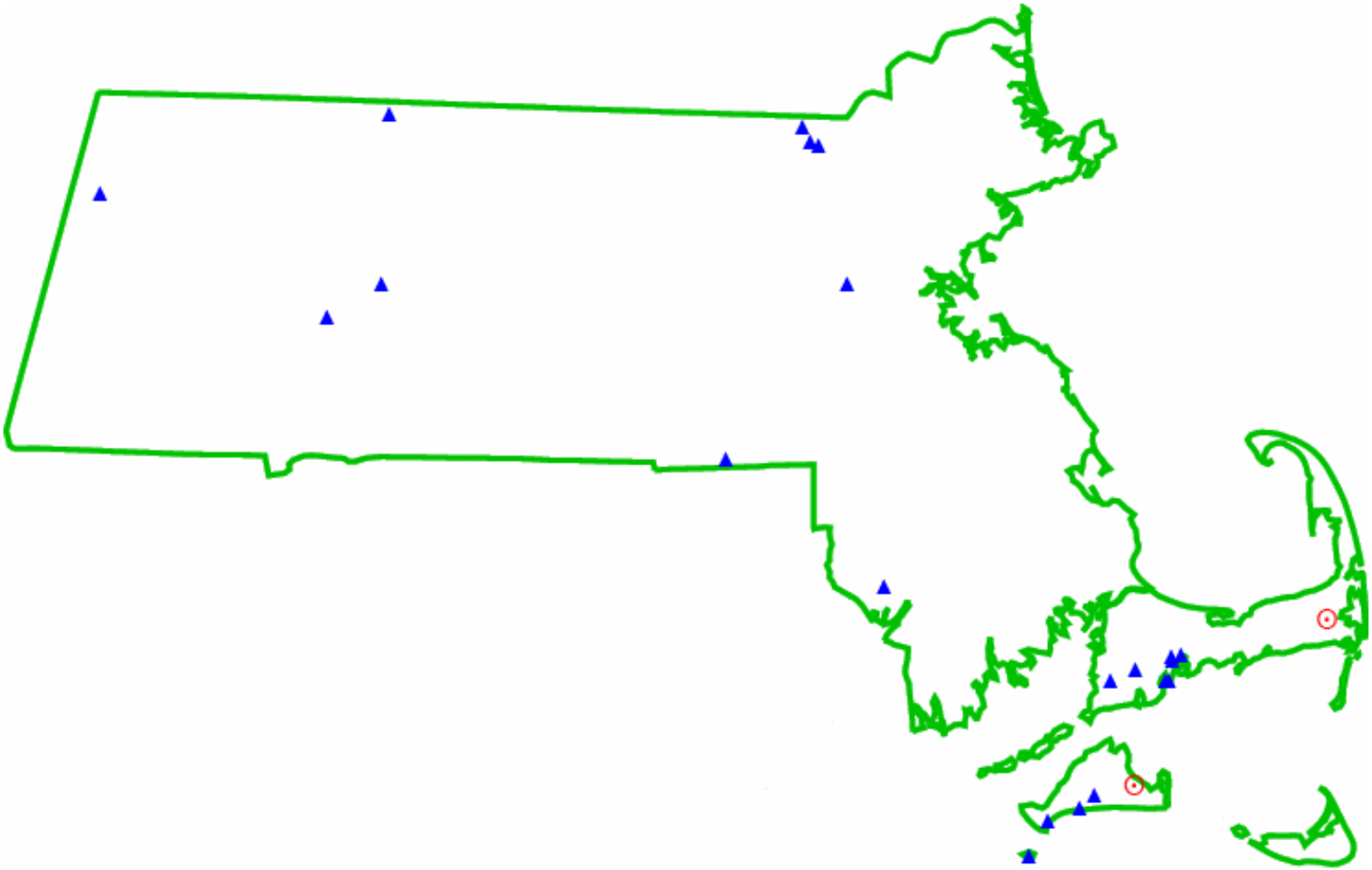






SMALL RENEWABLES INITIATIVE (=<10 kW)

SRI Awards April 1, 2005 through June 31, 2005



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SMALL RENEWABLES INITIATIVE (=<10 kW)

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NStar asks for major rate hikes

Utility says suppliers engage in profiteering

By Peter J. Howe, Globe Staff | November 5, 2005

NStar yesterday proposed raising rates residential customers in Boston and became the latest utility to seek pr global energy prices.

The Boston Globe

Cape Cod Times—Cape Cod, MA

•MAKE THIS YOUR LOCAL NEWS

Electricity costs to skyrocket

By DAVID SCHOETZ
Cape Cod Times

BARNSTABLE - The cost of the electricity supply for Cape Cod and Martha's Vineyard homeowners will increase by 81 percent starting with December meter readings. The cost of the actual electricity on residential bills will climb from 7.132 cents per kilowatt hour to 12.92 cents. Based on the average monthly use of 500 kilowatt hours, that means the supply side of a bill will go from $36 to $65, an increase of $350 a year.

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Massachusetts Electric proposes rate increase

TOP ...ld, Associated Press Writer ...2005

AP Associated Press

...setts Electric customers may soon see a ...eir bills under plans filed with the state to ...than 27 percent.

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NEW FEDERAL TAX INCENTIVE HIGHLIGHTS

- Solar Business Federal Tax Credit increased from 10% to 30% (plus accelerated depreciation)
- Solar Residential Federal Tax Credit set at 30% ($2,000 cap)
- Fuel Cell Business Federal Tax Credit set at 30% (or $1,000 per kW)
- Database of state renewable energy incentives:
  - http://www.dsireusa.org



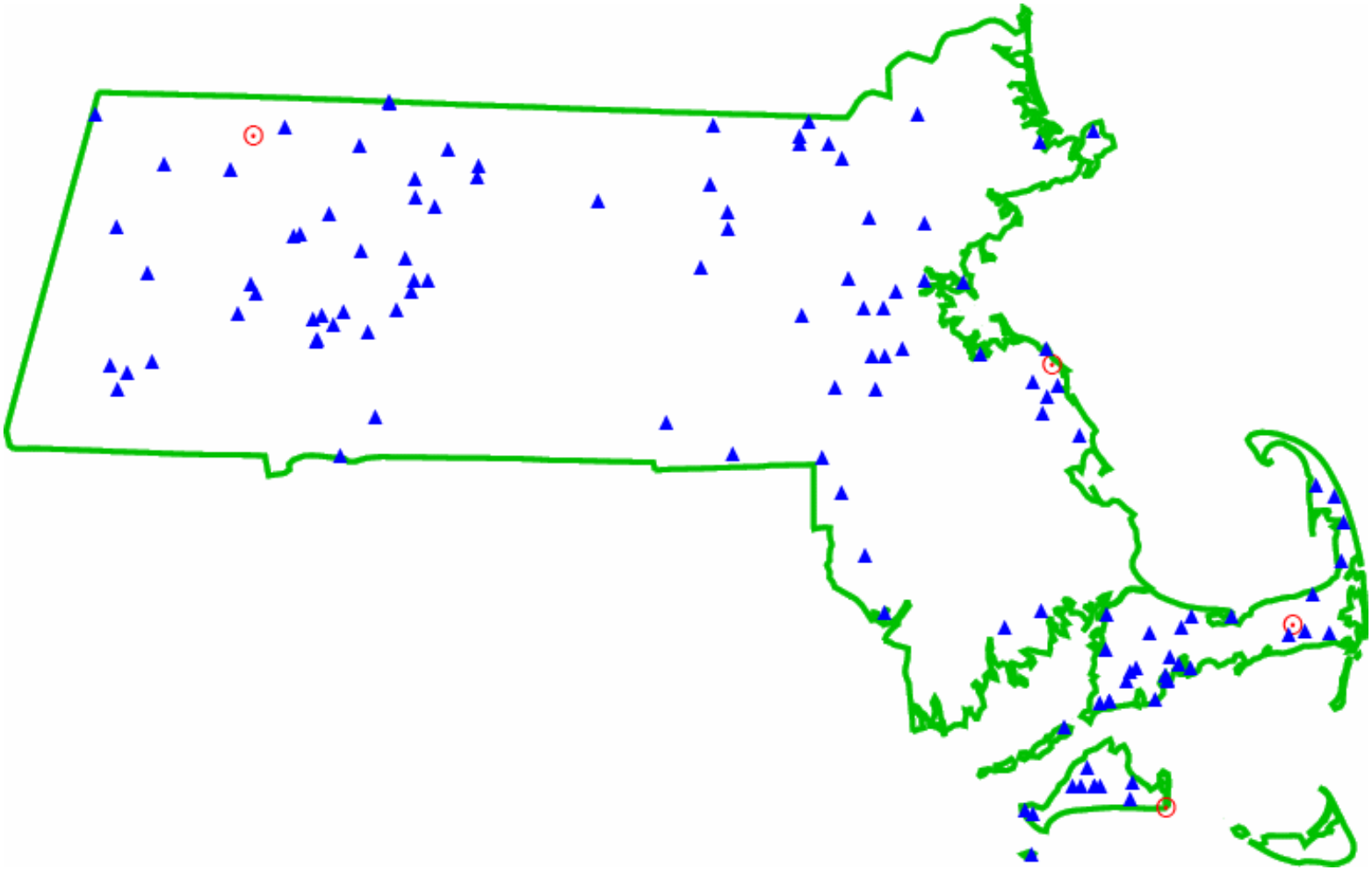






SMALL RENEWABLES INITIATIVE (=<10 kW)

SRI Projects through December 31, 2005



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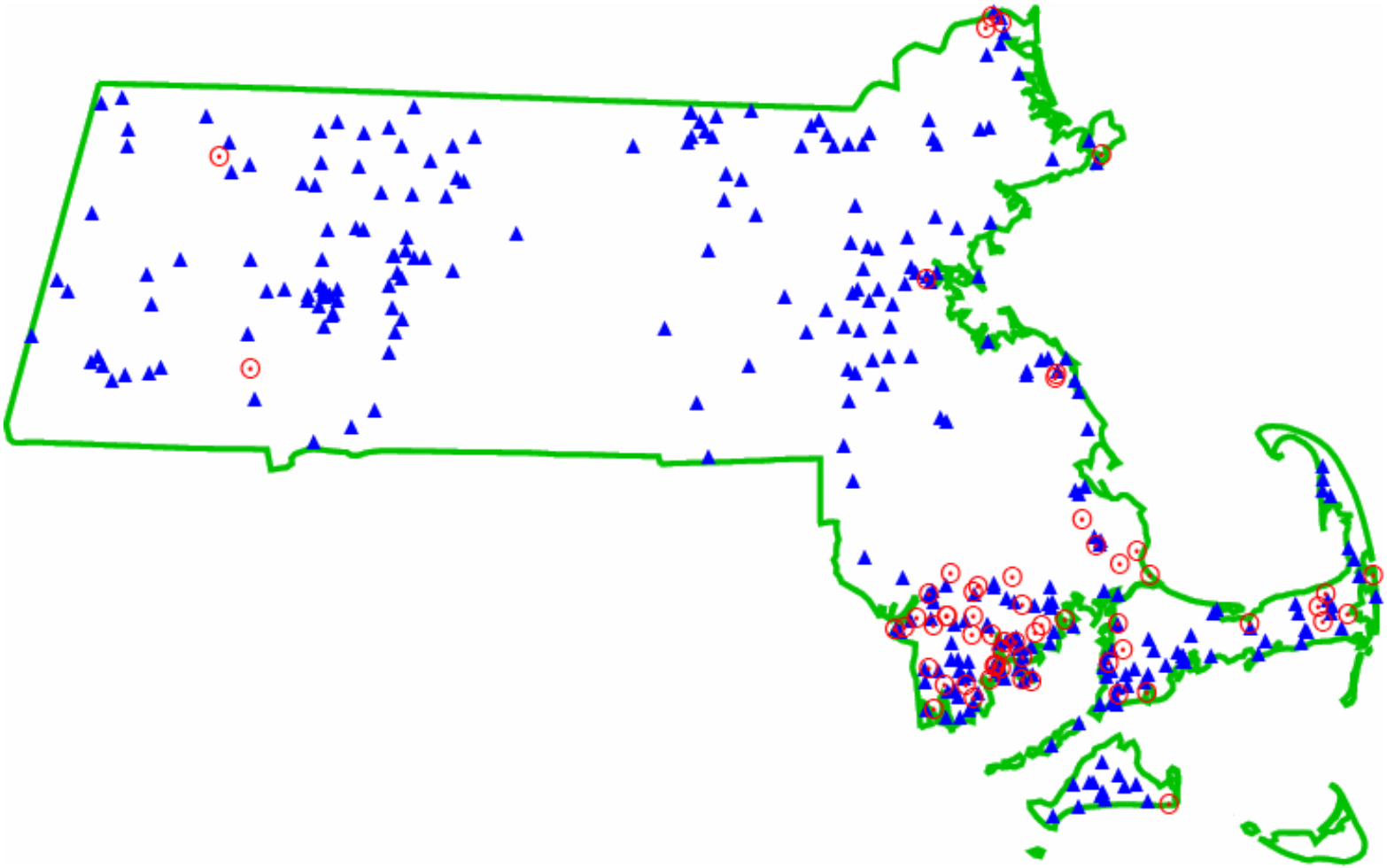
SMALL RENEWABLES INITIATIVE (=<10 kW)

SRI Projects through June 31, 2006



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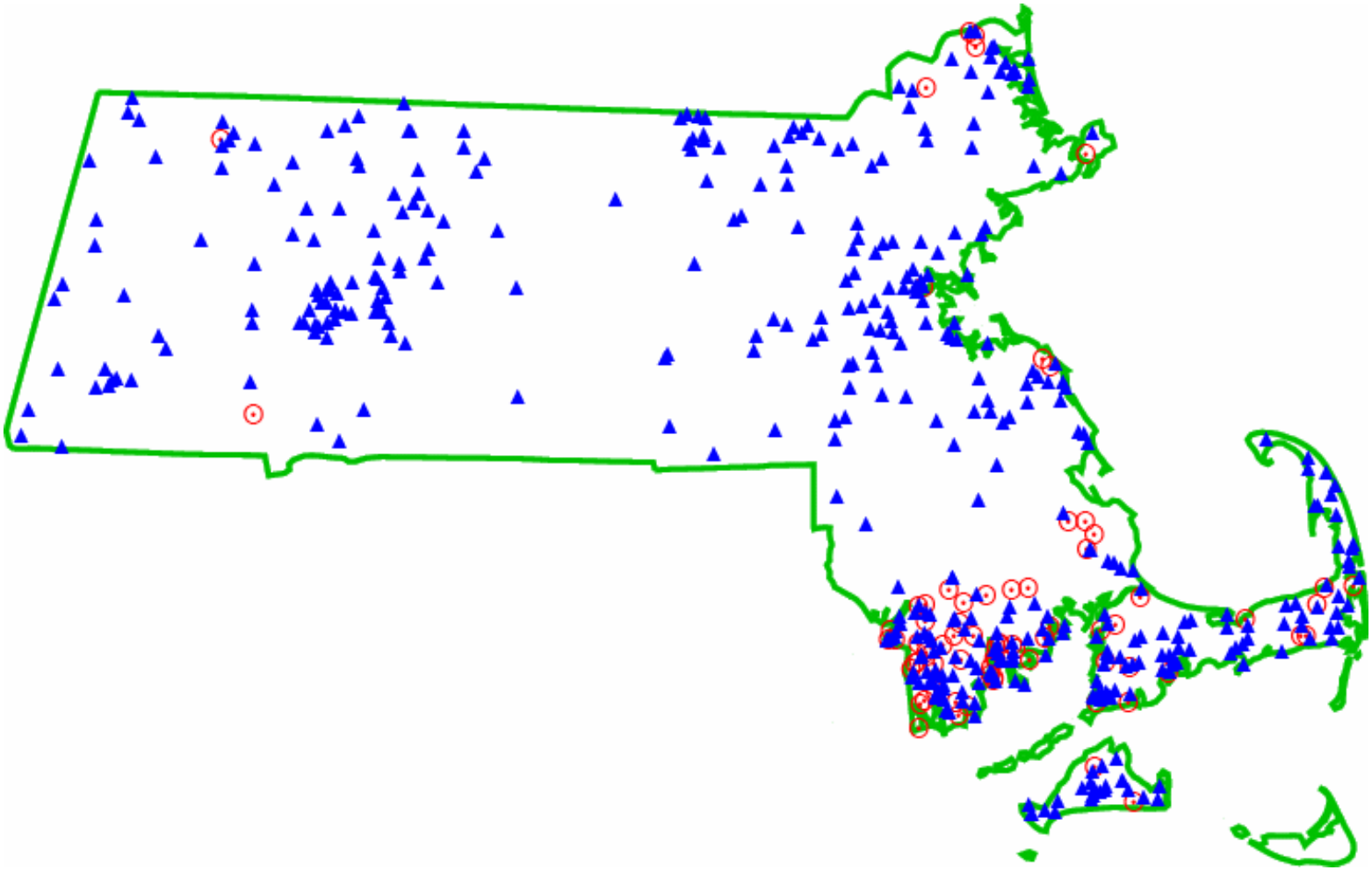
SMALL RENEWABLES INITIATIVE (=<10 kW)

SRI Projects through September 30, 2006



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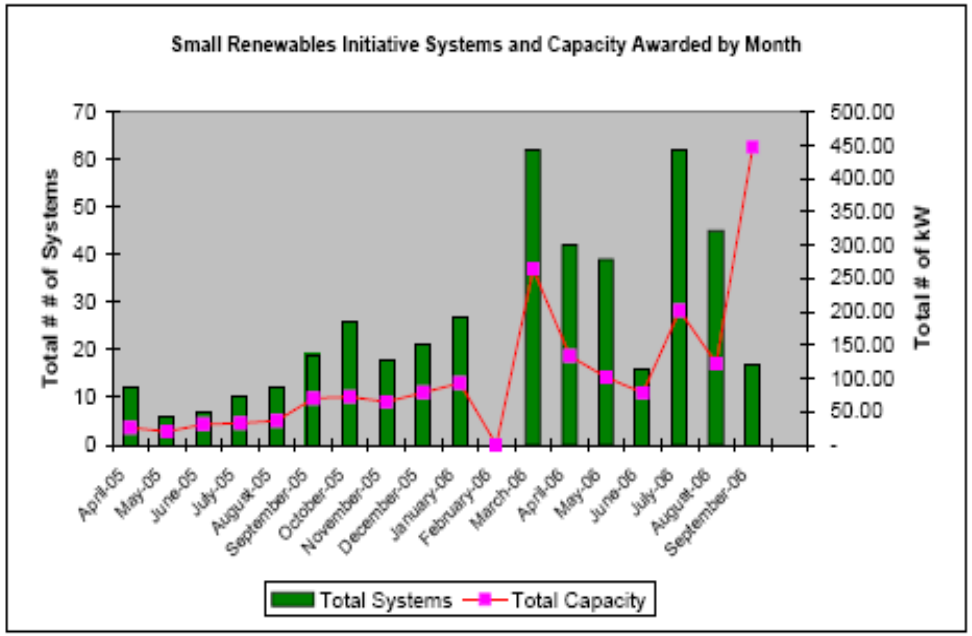
SMALL RENEWABLES INITIATIVE (=<10 kW)

- Over $5 Million allocated to 439 projects (76 wind and 363 solar) representing almost 1.9 MW from April 2005 to September 2006.



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SMALL RENEWABLES INITIATIVE (=<10 kW)









SMALL RENEWABLES INITIATIVE (=<10 kW)



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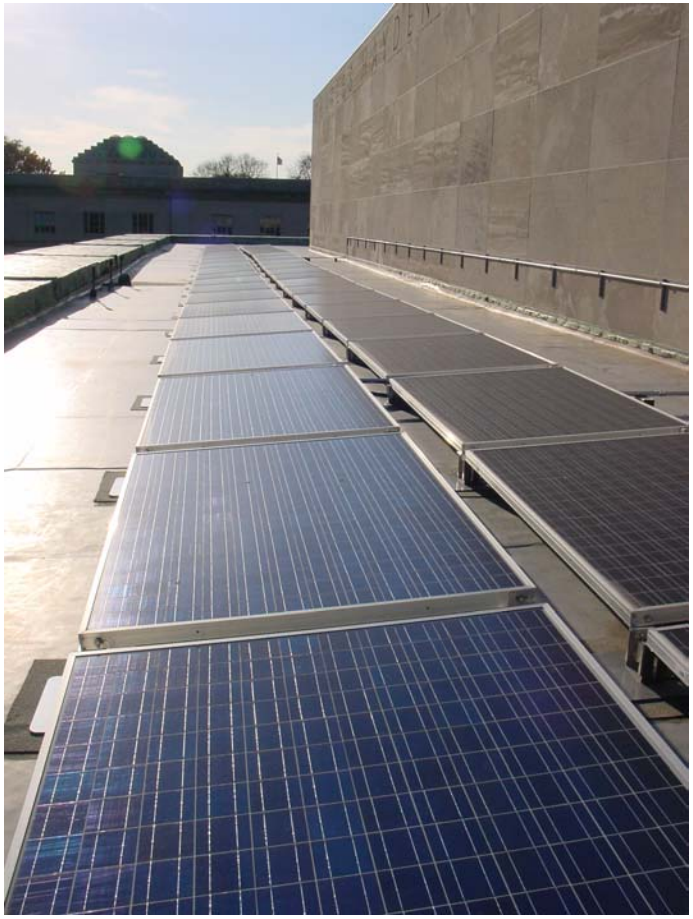
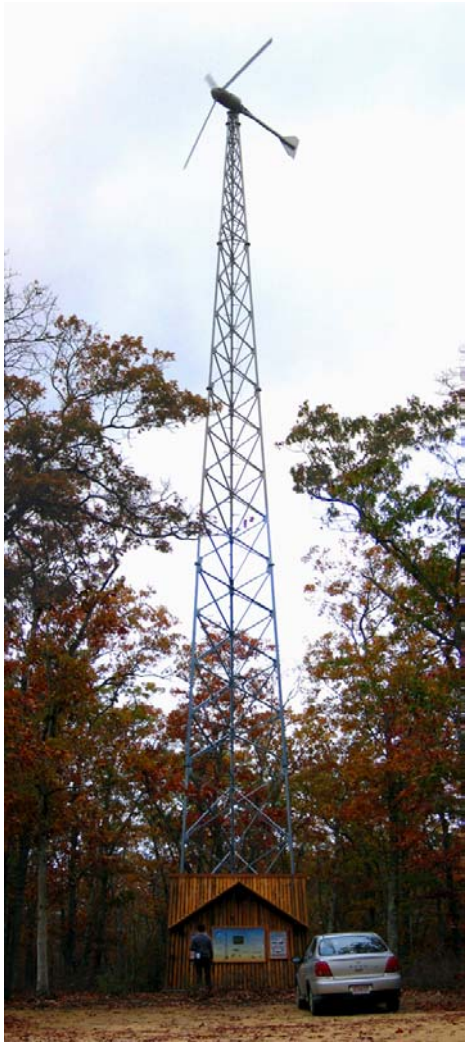
SMALL RENEWABLES INITIATIVE (=<10 kW)





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LARGE ONSITE RENEWABLES INITIATIVE (LORI)

- ~$7 million per year budget (pending approval).
- Competitive solicitation and evaluation process.
- Next due date is February/ March 2007. Offered twice per year.
- Public projects are eligible in addition to commercial, industrial, and institutional projects.

Project Type	Available Funding
Feasibility (no solar)	Capped at $30,000 requiring cost-share of at least 20% or $5000
Design and Construction	Design is capped at $75,000 or 75% of actual costs; Construction is capped at up to $500,000 or 75% of actual costs $250,000 for solar design and construction D&C Award based on incentive matrix









LARGE ONSITE RENEWABLES INITIATIVE (LORI)

- LORI Round 1 (for applications received by 1/12/06) was extremely competitive (Awarded 19 out of 39 applications):

Total Application Summary	# Projects
Design and Construction	15
Feasibility	24
Total	**39**

Design and Construction	# Projects
PV	10
Wind	3
Biomass CHP	1
Hybrid	1
Total	**15**

Feasibility	# Projects
PV	2
Wind	13
Biomass CHP	5
Hybrid	2
Hydro	1
TBD	1
Total	**24**








LARGE ONSITE RENEWABLES INITIATIVE (LORI)

- LORI Round 2 (for applications received by 8/17/06) was also extremely competitive (40 applications requesting ~$7.5 million):
  - 19 projects and ~$4 million awarded – some "good" projects rejected.

Total Application Summary	# Projects		Grant Request ($)
Design and Construction	19	$	6,678,852
Feasibility	21	$	771,068
Total	40	$	7,449,920









LARGE ONSITE RENEWABLES INITIATIVE (LORI)

- IBEW Local 103 Turbine (100 kW)
- Tower manufactured by Morrison Berkshire in MA:









LARGE ONSITE RENEWABLES INITIATIVE (LORI)

Mass Maritime Academy

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LARGE ONSITE RENEWABLES INITIATIVE (LORI)

- The Massachusetts Innovation Center in Fitchburg
- Green building elements include solar (147 kW), reuse of building materials, storm-water management system, and a ground-coupled heat pump.
- Formerly a mill building, is now the site of the North Central Charter School, as well as commercial and residential space.









LARGE ONSITE RENEWABLES INITIATIVE (LORI)

MassInnovation's PV trellises, as seen from below.

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LARGE ONSITE RENEWABLES INITIATIVE (LORI)

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LARGE ONSITE RENEWABLES INITIATIVE (LORI)








LARGEST PV PROJECT IN NEW ENGLAND (425 KW)

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LARGE ONSITE RENEWABLES INITIATIVE (LORI)

- Examples of ongoing LORI Projects:

Varian	3 to 5 MW wind
Jiminy Peak	1.5 MW wind
Iggy's Bread of the World	45 kW biodiesel cogen
Extrusion Technology	60 kW solar







PV PROJECT ECONOMICS

- Assumes MTC rebate and grant plus adders for Economic Target Area and MA-manufactured (does not account for potential inverter replacement).

Examples of Solar PV Project Simple Paybacks		
	Vanilla Building	**Green Building**
Not for Profit	20+ years	~16 years
Residential*	12+ years	~10 years
Public	15+ years	~12 years
Taxable Business*	**~5 years**	**~4 years**

- In addition, under reasonable long-term financing terms, many PV projects can be **cash flow positive from day 1** (energy savings + REC revenue exceeds debt payments plus O&M).
- *Assumes federal and state tax incentives

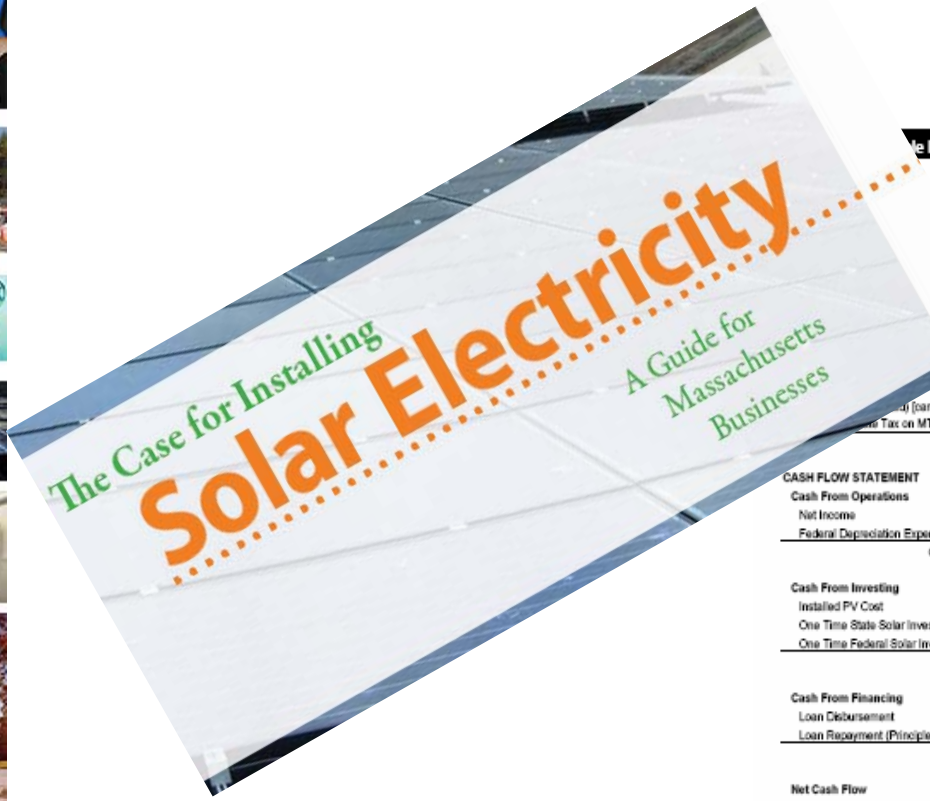








PV PROJECT ECONOMICS



…e Rebate; Pro Forma Project Economics

Cost)	$ 8,585	$ 8,798	$ 9,017	$ 9,241	$ 9,470	$
	$ 3,096	$ 3,051	$ 3,035	$ 3,020	$ -	$
…venue (Avoided Costs)	$ 11,651	$ 11,849	$ 12,052	$ 12,261	$ 9,470	$
	$ (500)	$ (515)	$ (530)	$ (546)	$ (563)	$
	$ -	$ -	$ -	$ -	$ -	$
…rating Expenses	$ (500)	$ (515)	$ (530)	$ (546)	$ (563)	$
EBITDA	$ 11,151	$ 11,334	$ 11,522	$ 11,715	$ 8,908	$
	$ (72,250)	$ (115,600)	$ (69,360)	$ (41,616)	$ (41,616)	$
EBIT	$ (61,099)	$ (104,266)	$ (57,838)	$ (29,901)	$ (32,708)	$
	$ -	$ -	$ -	$ -	$ -	$
EBT	$ (61,099)	$ (104,266)	$ (57,838)	$ (29,901)	$ (32,708)	$
	$ 21,736	$ 36,850	$ 20,606	$ 10,834	$ 11,728	$
…[can not deduct federal depreciation expense]	$ (1,004)	$ (1,020)	$ (1,037)	$ (1,054)	$ (802)	$
…e Tax on MTC Capital Cost Rebate	$ (76,594)					
Net Income	$ (116,961)	$ (68,436)	$ (38,269)	$ (20,121)	$ (21,781)	$
CASH FLOW STATEMENT						
Cash From Operations						
Net Income	$ (116,961)	$ (68,436)	$ (38,269)	$ (20,121)	$ (21,781)	$
Federal Depreciation Expense	$ 72,250	$ 115,600	$ 69,360	$ 41,616	$ 41,616	$
Cash Flow From Operations	$ (44,711)	$ 47,164	$ 31,091	$ 21,495	$ 19,835	$
Cash From Investing						
Installed PV Cost	$ (237,500)					
One Time State Solar Investment Tax Deduction (Actual Cash Value	$ 38,250					
One Time Federal Solar Investment Tax Credit	$ 127,500					
Cash Flow From Investing	$ (237,500)	$ 165,750	$ -	$ -	$ -	$ -
Cash From Financing						
Loan Disbursement	$ -					
Loan Repayment (Principle)	$ -	$ -	$ -	$ -	$ -	$
Cash Flow From Financing	$ -	$ -	$ -	$ -	$ -	$ -
Net Cash Flow	$ (237,500)	$ 121,039	$ 47,164	$ 31,091	$ 21,495	$ 19,835
Cumulative Cash Flow	$ (237,500)	$ (116,461)	$ (69,297)	$ (38,206)	$ (16,711)	$ 3,124

http://www.masstech.org/cleanenergy/cando/howto.htm

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WIND PROJECT ECONOMICS

- Assumes grants and federal and state tax incentives (does not account for potential inverter replacement).

Rough Estimate of "Best Case" Simple Payback Period (Years) Based on Wind Resource (m/s at 70 meters)						
Turbine Capacity (kW)	100 kW	250 kW	600 kW	850 kW	1500 kW	2500 kW
Hub Height	35 m	42 m	50 m	60 m	70 m	80 m
5.5 m/s at 70 m	15	12	10	9	8	9
6.0 m/s	10	8	7	8	6	7
6.5 m/s	8	6	6	7	6	6
7.0 m/s	6	6	6	6	5	5
7.5 m/s	6	5	5	5	5	5

- In addition, under reasonable long-term financing terms, good wind projects can be **cash flow positive from day 1** (energy savings + REC revenue exceeds debt payments plus O&M).

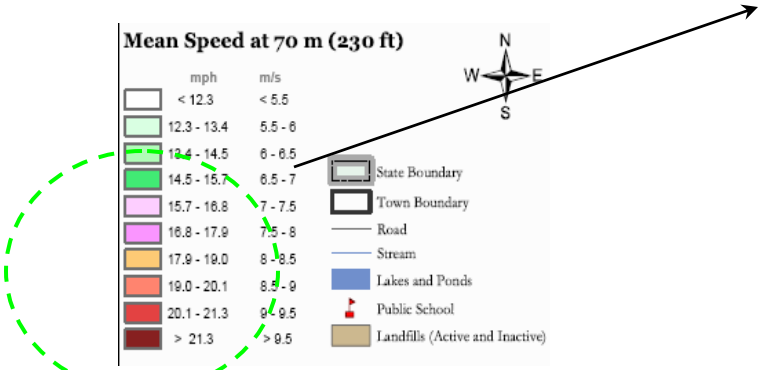


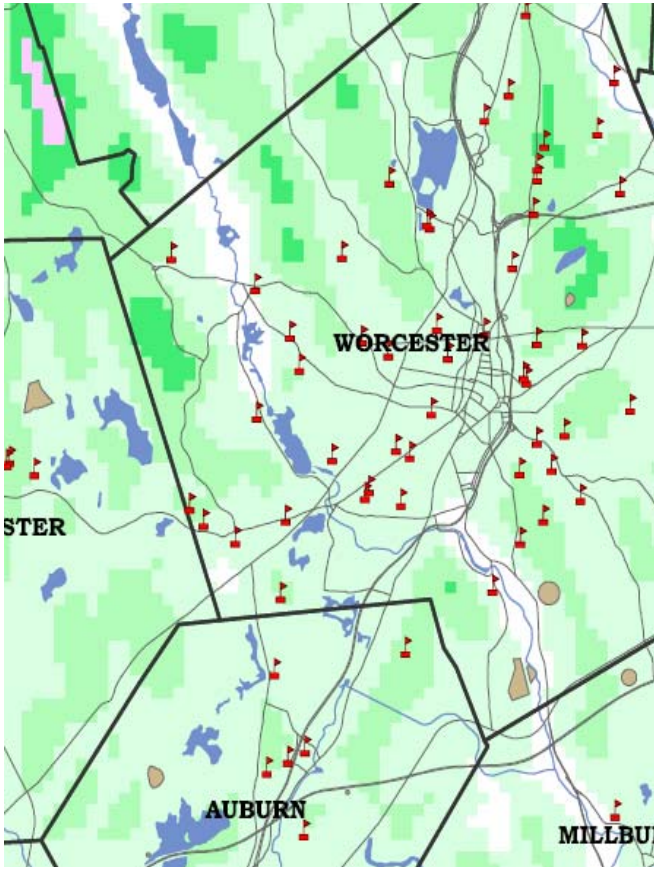





WIND PROJECT ECONOMICS

- Basic wind project requirements:
  - Good wind resource
    http://truewind.teamcamelot.com/ne/
  - Compatible site (e.g., suitable area for turbine, proximity of neighbors, etc.)
  - Compatible onsite electricity load (avoid full retail rate)
  - Empowered project champion
  - Good consultants





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GRANT AND REBATE AVAILABILITY

- Large Onsite Renewables Initiative Tentative Schedule (~$3.5 million available for next round):
  - http://www.masstech.org/RenewableEnergy/large_renewables.htm

Round 3 Solicitation Released	December 2006
Applications Due	**Winter 2007**
Awards Announced	Spring 2007

- Small Renewables Initiative:
  - First come first serve rolling application process.
  - Funding through FY10
  - http://www.masstech.org/RenewableEnergy/small_renewables.htm








LEVERAGE UTILITY ENERGY EFFICIENCY INCENTIVES

- Both the Small Renewables Initiative and Large Onsite Renewables Initiative have an energy efficiency requirement (**at a minimum get your business audited**):
  - Residential customers:

    http://www.masssave.com/
  - Other customers (go to your utility site):
    - http://www.nationalgridus.com/masselectric/business/
    - http://www.nstaronline.com/your_business/
    - http://www.gasnetworks.com/efficiency/applications.asp







FOR MORE INFORMATION…

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